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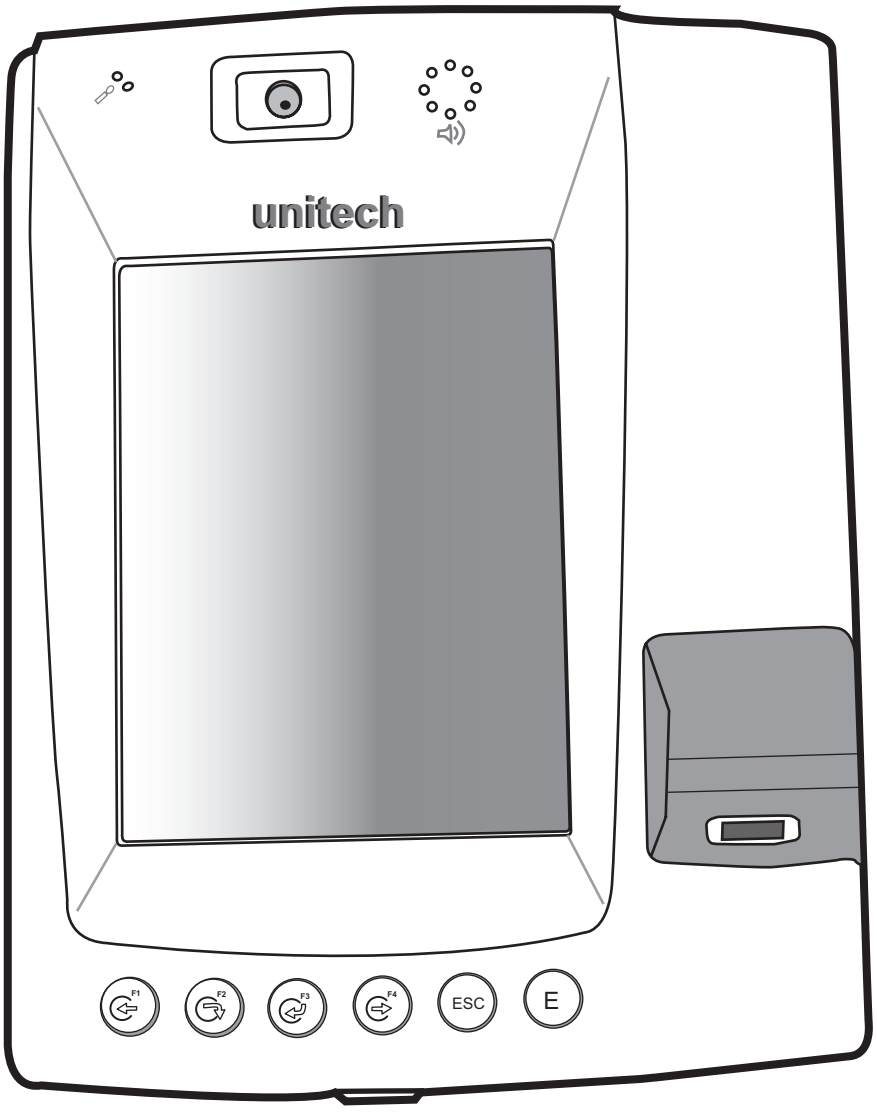
MR650 TASHI Terminal



User's Manual

400513G Rev. H

About the MR650 User's Manual

This manual explains how to install, operate and maintain the MR650 TASHI Terminal.

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Regulatory Compliance Statements

FCC Statement

This is a FCC Part 15 Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Canadian Compliance Statement

This Class A Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte les exigences du Règlement sur le matériel broilleur du Canada.

European Conformity Statement

Declaration of Conformity with Regard to the R&TTE 1999/5/EC and EMC 89/336/ EEC directives.

RoHS Statement

This device conforms to RoHS (Restriction of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

Notices

The MR650 is equipped with a Lithium-Ion battery pack. However, the MR650 may not start without an external power source due to battery discharge after extended storage periods. To charge the battery to full capacity, connect the MR650 with the AC Adapter and charge the MR650 for at leaset 22 hours.

The battery supplies operational power to the MR650 for approximately two hours (configuration and backlight use dependant) or provides backup data for up to three days without an external power source.

Battery Charge Notice

It is important to consider the environmental temperature whenever the Lithium-Ion battery pack is charged. Charging is most efficient at room temperature or in a slightly cooler environment. It is essential that batteries charge within the temperature range of 23°F to 122°F. Charging batteries outside of this specified temperature range could damage the batteries and shorten their charging life cycle.

Battery Storage and Safety Notice

Charged Lithium-Ion batteries may be left unused for several months, but their capacity may be depleted due to buildup of internal resistance. In this case they will require recharging. Lithium-Ion batteries may store at temperatures between -4°F to 140°F. But the batteries may deplete more rapidly at the warmer end of this range. It is recommended to store batteries at room temperature.

MR650 Warranty

Unitech limited Warranty covers the following items:

- MR650 TASHI Terminal - 1-year limited warranty.
- MR650 Cables - 1-year limited warranty.
- MR650 Backup Battery - 3-month warranty.

Table of Contents

Preface

About The MR650 User's Manual i

Regulatory Compliance Statements i

FCC Statement i
Canadian Compliance Statement i
European Conformity Statement i
RoHS Statement i

Notices ii

Battery Charge Notice ii
Battery Storage and Safety Notice ii

MR650 Warranty ii

Chapter 1

Getting Started 1

Introducing the MR650 1

Features 1

Package Contents 2

MR650 Overview 3

Front Panel 3
Back Panel 3

Setting up the MR650 4

Open Backplate 4
Connect Power 5

Starting the MR650 6

Powering On 6
Using the Stylus 6
Calibrate Screen 6
Setting Date and Time 7

Chapter 2

Using the Hardware 8

Using the Keypad 8

Using Windows CE Keyboard 9
Entering Characters 9
Numeric Character 9
Moving the Keyboard 9
Closing the Keyboard 9

Using the Proximity MSR or Bar Code Reader 10

Testing Reader Data 10

Using the MiFare Reader 11

Testing the MiFare Card Verification 11

Using the Fingerprint Reader 13

Testing Finger Print Verification 13
Enrolling a Fingerprint Stamp 14
Verifying the Fingerprint Stamp 14

Using the Camera **15**
Testing the Imager 15
Chapter 3
Data Communication 16
Establishing an MR650/PC Connection **16**
Serial Cable 16
Ethernet Cable 16
Wireless Communication 17
RF Communication 17
Using Microsoft ActiveSync **18**
Additional Microsoft ActiveSyce Capabilities 18
Microsoft ActiveSync Requirements 18
Installing Microsoft ActiveSync 18
Connecting the MR650 to a Computer 19
Setting up the Wireless Local Area Network Card 21
Obtaining an IP Address via DHCP Server 21
Specifying an IP Address 22
Wi-Fi Connection 23
Chapter 4
Bar Code Scanner Programs 25
Scanner Settings **25**
Scan2Key **25**
Registry Backup/Restore **26**
Audio Demo Program **27**
Chapter 5
Power System 28
Charging the Backup Battery for the First Time **28**
Checking the Battery Status 28
Extending Battery Life **29**
Changing the Automatic Power Settings 29
Reducing CPU Speed 29
Adjusting the Backlight 30
Performing a Hardware Reset **31**
Performing a Warm Start 31
Performing a Cold Start 31
Appendix A
System Specification 32
Appendix B
Terminal Block 33
Overview of the MR650 Terminal Block **33**
MR650 Terminal Block Pin Assignment 34
Appendix C
Worldwide Support 36

Chapter 1

Getting Started

Introducing the MR650

Thanks for purchasing the MR650 TASHI (Time & Attendance, Access Control, Security, Home Automation and Intercom) Terminal. The MR650 is designed to meet the requirements of Time & Attendance, Loyalty Programs and Work-In-Progress applications. It communicates with central host and T&A systems through standard Ethernet or WLAN networks. The built-in CMOS digital camera, microphone and audio speaker provides complete area security in a single compact device. The MR650 features a variety of built-in readers including proximity and fingerprint identification. It also includes programming tools and support software for developing custom security.

Features

System
- Microsoft Windows CE 5.0 Professional Plus.
- 520Mhz Intel PXA270 Processor.
- 128 MB SDRAM.
- 64 MB Flash ROM.

Display
- 5.6” QVGA (240 x 320 pixel) LCD Touch-screen.

Multimedia
- 1.3 Megapixel CMOS Color Camera.
- Audio Output via 0.8 Watt Speaker.
- Built-in Microphone.

Expansion Slot
- CF Type II Card Slot for Wireless 802.11 b/g.
- SD Memory Slot.

Magnetic Stripe Reader
- 3-track MSR Reader.

Fingerprint Reader
- Sensor: Authentec AFS8500.
- Verification Time: 2 Seconds (Average).
- Equal Error Rate: 0.1% at Max Security.
- Number of Templates: 4,000.

Proximity Reader
- EM, 125kHz.
- HID, 125kHz.
- MiFare, 13.56Mhz.

Wireless Connectivity
- 802.11b/g (optional).

Communication
- RS232.
- USB Host.
- Output Relays (3).
- TTL Digital Inputs (4).
- Ethernet Connection.
- Power-over-Ethernet (optional.)

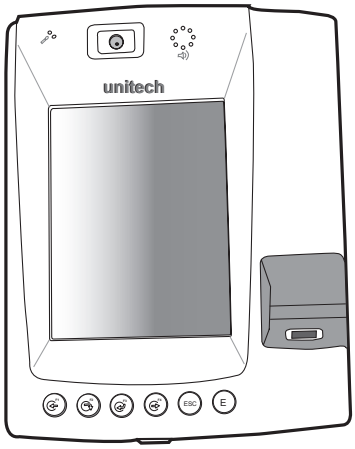
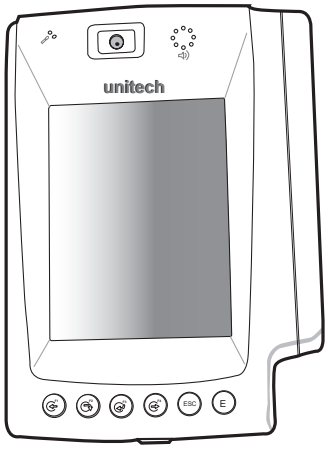
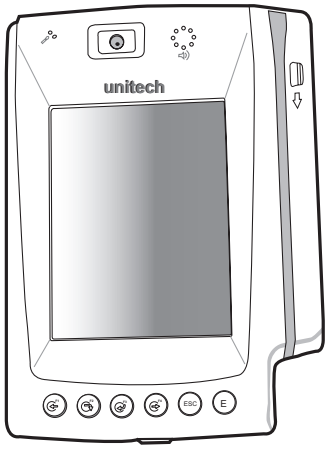
Battery Life
- Operation Time: 2 hours.
- Charging Time: 22 hours.
- Embedded Backup Battery.

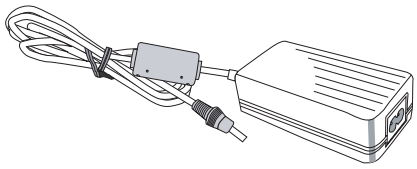
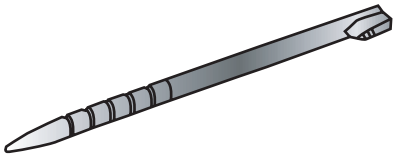
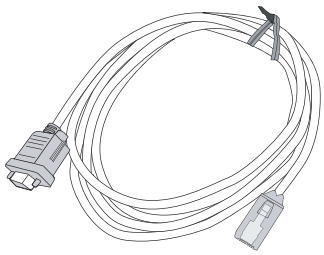
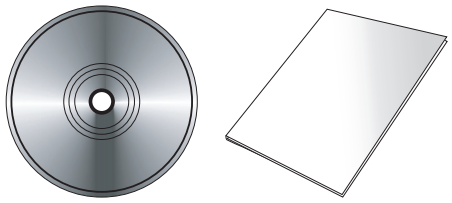
User Interface
- Six Hard Keys.
- Touch-screen with Stylus.

Software Programming Tools
- Embedded Visual Basic Terminal Program for T&A.
- Embedded Visual C++ Terminal Program for T&A.

Package Contents:

Make sure the following items are in the MR650 box:

		
MR650 Proximity + Fingerprint Model	**MR650 Proximity Model**	**MR650 with 3-Track MSR or Bar Code Reader Model**

	
AC Adapter	**Stylus**
	
RS232 Cable	**Manual CD-ROM and Unitech MR650 Quick Reference Guide**

Please contact a Unitech representative if anything appears missing or damaged.

NOTE: A plastic film covers the screen on a new MR650. Remove the plastic film by peeling back from one corner to another. Without the plastic film the MR650 is more susceptible to scratching. But, the MR650's display is more legible.

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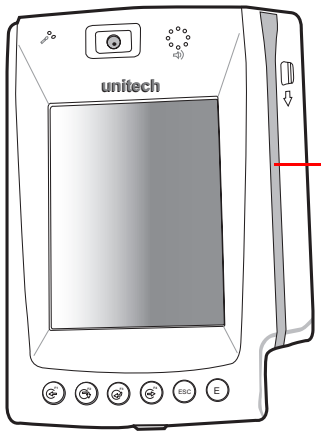
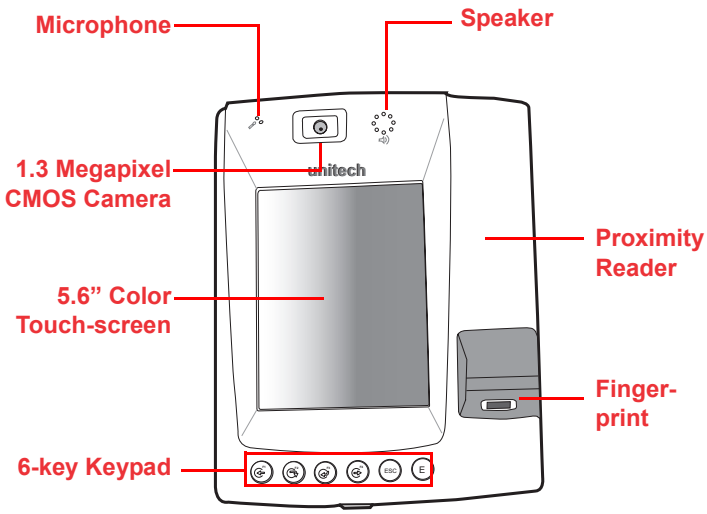
MR650 Overview

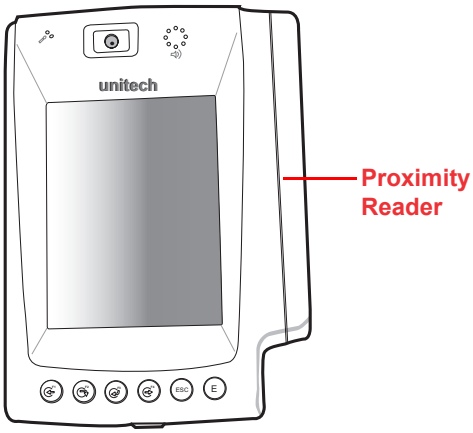
Front Panel



MR650 MSR Model

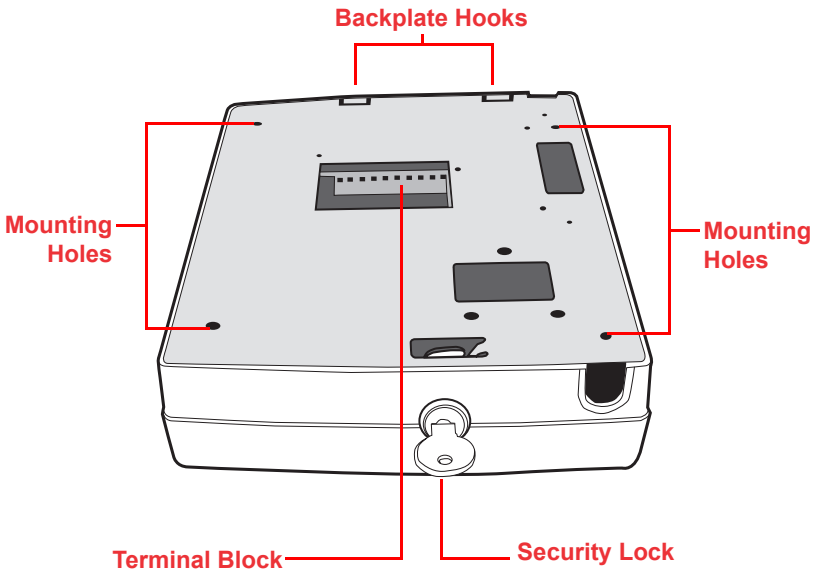


MR650 Proximity + Finger-print Model



MR650 Proximity Model

Back Panel

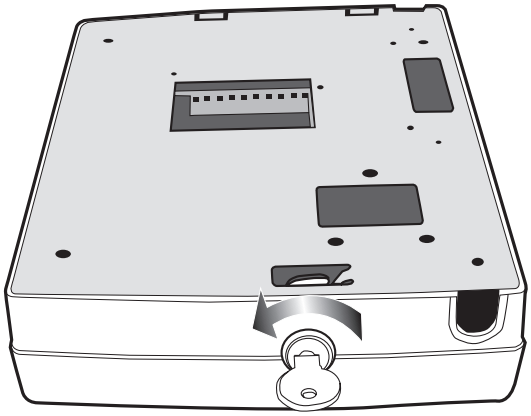


Setting up the MR650

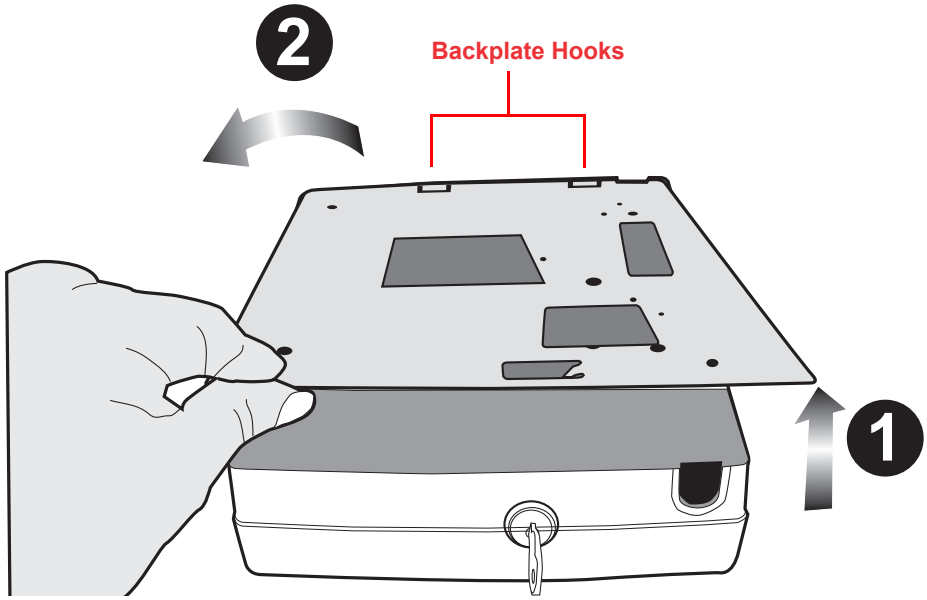
This section explains how to charge the battery and how to start the MR650 for the first time.

Open Backplate

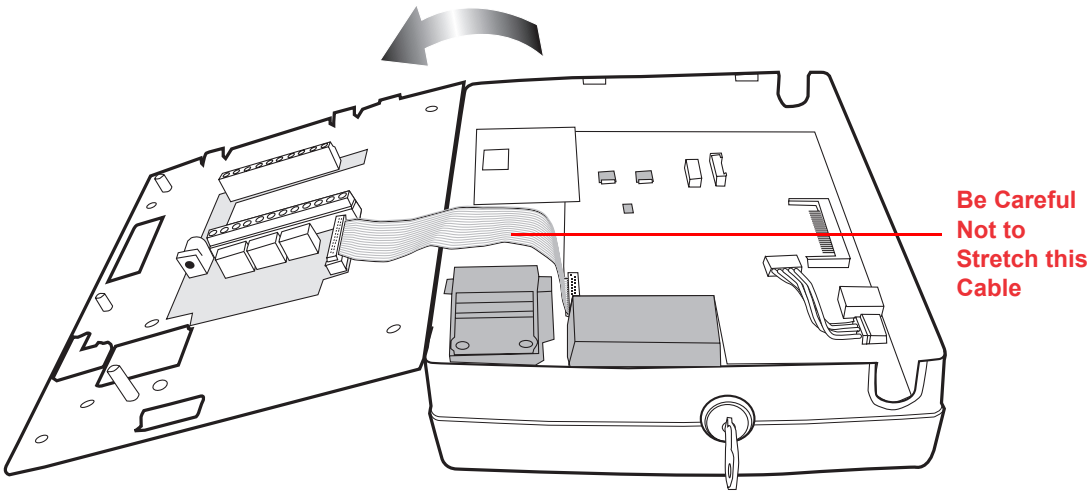
1. Insert the MR650 key into the security lock and turn counterclockwise.



2. Lift the backplate up to a 45-degree angle (**1**) and pull the backplate out from under the back-plate hooks (**2**).



3. Flip the backplate over to the left side.



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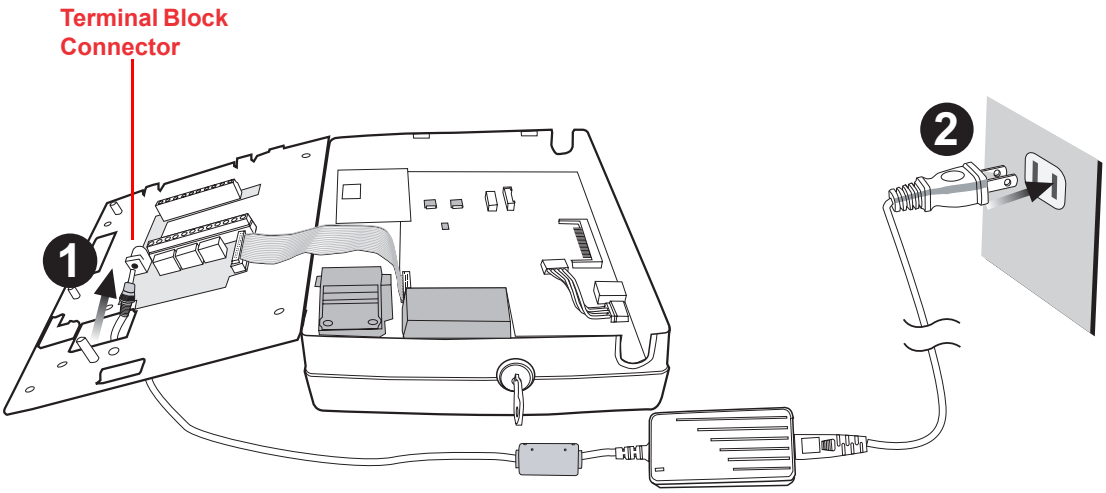
Connect Power

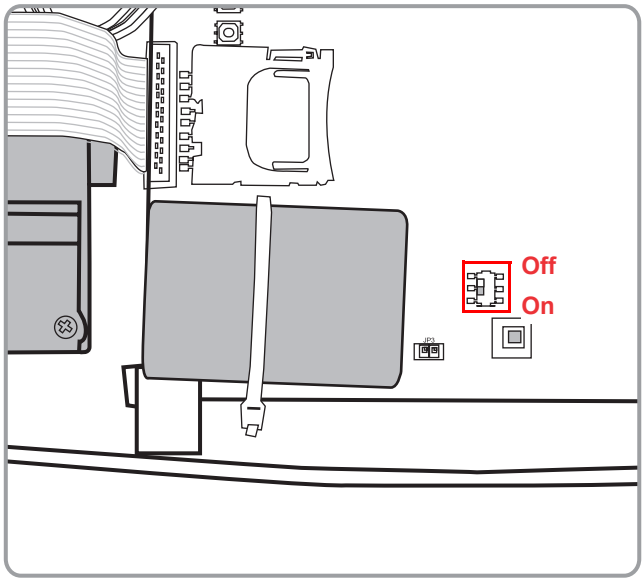
Follow these instructions to connect power to the MR650:

NOTE: Charge the MR650 for at least 22 hours prior to initial use. The battery starts charging as soon as the MR650 connects to a power source.

1. Insert the AC Adapter through the backplate and into the Terminal Block Connector.



2. Plug the other end of the AC Adapter into a power source.
3. To charge the MR650 battery, use a stylus to move the Battery Switch to the **On** position.
4. Close and lock the backplate.



Starting the MR650

Powering On

The MR650 automatically starts when the AC Adapter plugs into a power source. The MR650 welcome screen appears followed by the Windows CE screen.

Using the Stylus

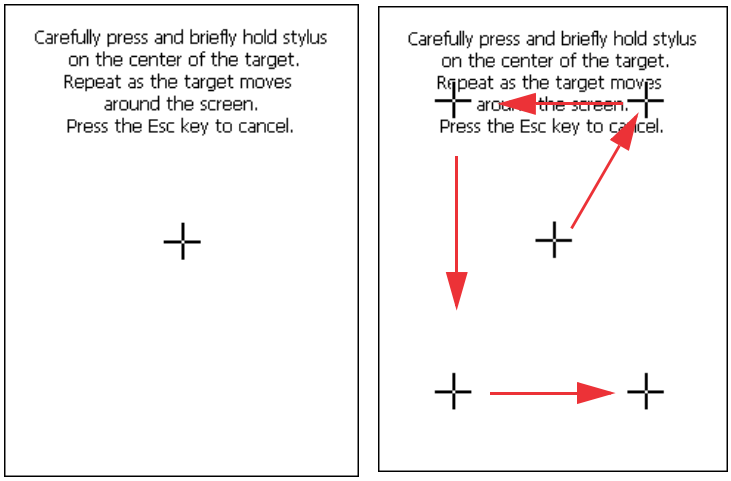
CAUTION! Never use anything other than the MR650 stylus on the MR650's screen. Using an object other than the stylus could cause permanent damage.

1. Hold the stylus like a pencil.
2. Lightly tap the tip of the stylus to make a menu choice.
3. Double-tap to open programs.
4. Use the stylus to print letters or numbers into a field or on a form.

Calibrate Screen

The calibration screen automatically appears when the MR650 powers on for the first time, or after the system is reset.

Use the stylus to tap a sequence of target marks on the MR650's screen. Firmly hold the stylus on top of the target mark for a moment, and then remove. Continue to tap the target mark as it stops along the corners of the screen.


Carefully press and briefly hold stylus on the center of the target. Repeat as the target moves around the screen. Press the Esc key to cancel.
Carefully press and briefly hold stylus on the center of the target. Repeat as the target moves
Press the Esc key to

After the calibration setting is complete, press the **E** key to save the setting, or press **ESC** to cancel the setting.

The Date/Time Properties window automatically appears after the calibration setting is complete.

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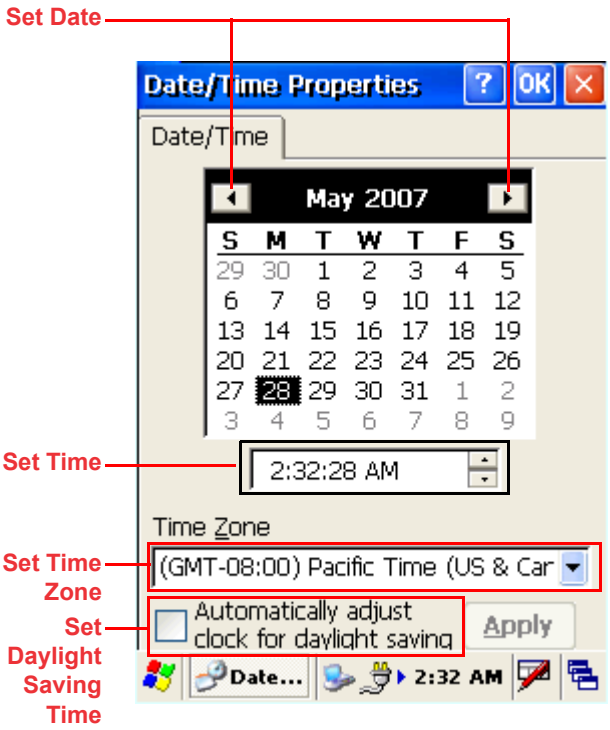
Set Date and Time

In the Date/Time Properties window, use the stylus to select the current date and time, time zone, and daylight saving time option.

- Tap the left or right arrows to scroll through the year and month, or tap the year and month to select the setting.
- Tap on the Hr/Min/Sec/AM/PM to input the Hr/Min/Sec and set the time.
- Tap the arrow and set the correct time zone from the drop down menu.
- Check the box to enable Windows to **automatically adjust for daylight saving time**.
- Tap **OK** to save the settings and exit the Date/Time Properties dialog or tap **X** to exit without saving.

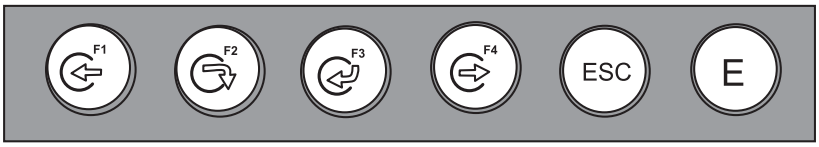
NOTE: To change the time and date at any time tap → **Settings** → **Control Panel** → Double-tap **Date/Time**.



Using the Hardware

Using the Keypad

The MR650 features six hard keys.



The following table describes each key.

Key	Main Function
	Clock in: [F1]: Function Key.
	Break out: [F2]: Function Key.
	Break in: [F3]: Function Key.
	Clock out: [F4]: Function Key.
	[ESC] Performs the same function as tapping on the touch-screen.
	[ENTER] Moves the cursor to the next line or executes a command.

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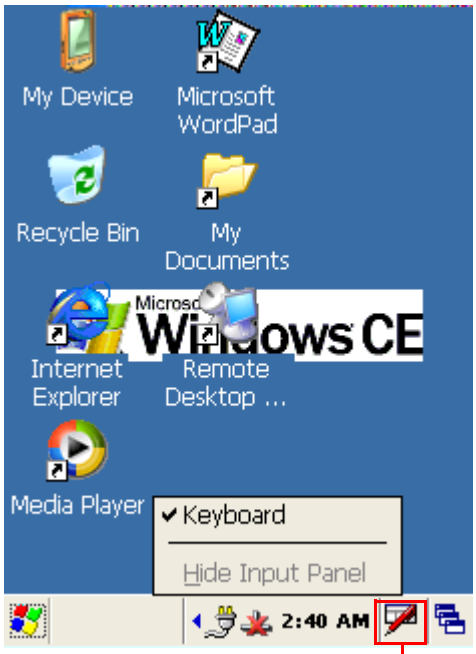
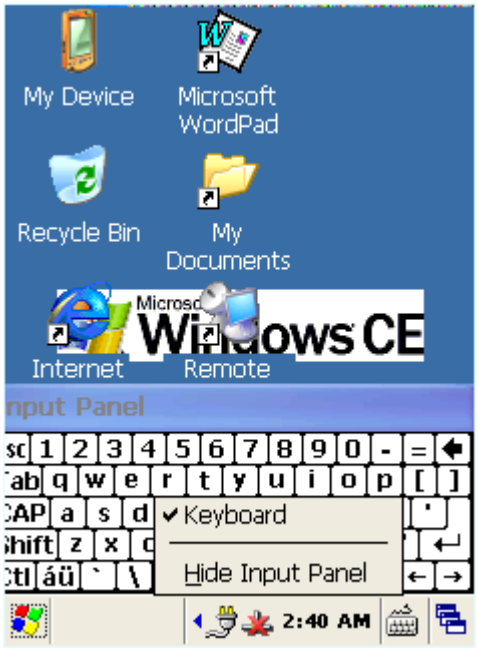
Using the Windows CE Keyboard

The Windows CE Software provides a touch-screen keyboard for alphanumeric input. The Windows based keyboard replicates the layout of a standard PC keyboard.

Open the Windows CE keyboard by tapping **keyboard** on the task bar and tap **Keyboard**.





Entering Characters

To input a character, tap the onscreen button corresponding to the desired symbol.

Special Character Support:

Tap **áü** to switch from the Standard English keyboard to the Special Characters keyboard.

Numeric Keypad

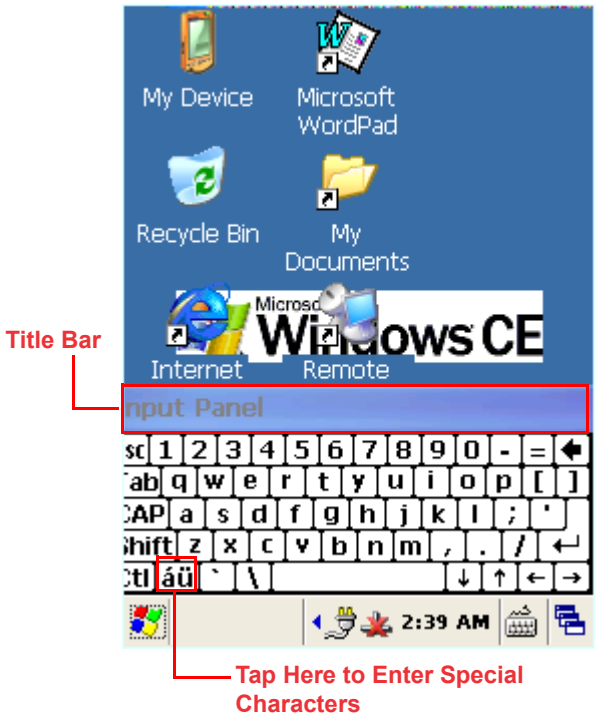
To access the Numeric keypad, select the Keyboard icon on the taskbar and tap **Numeric Keypad**.

Moving the Keyboard

Tap the title bar to drag and place the keyboard across the screen.

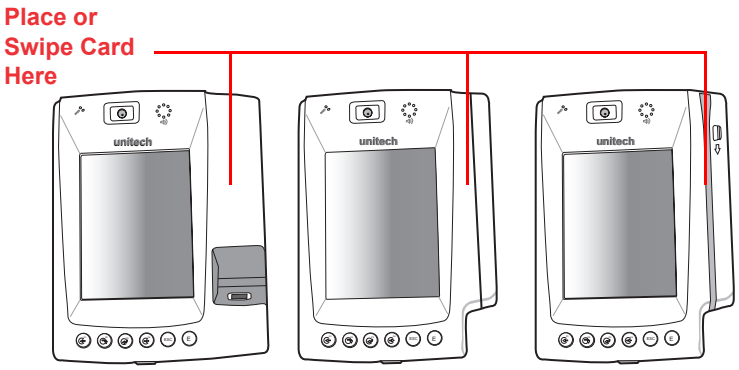
Closing the Keyboard

Tap the keyboard icon and tap **Hide Input Panel** to close the Windows CE keyboard.



Using the Proximity, MSR or Bar Code Reader

The MR650 features an integrated proximity reader (EM125kHz, HID 125kHz and 13.56Mhz MiFare), MSR, and bar code reader which can read proximity cards, magnetic stripe cards and bar code labels.

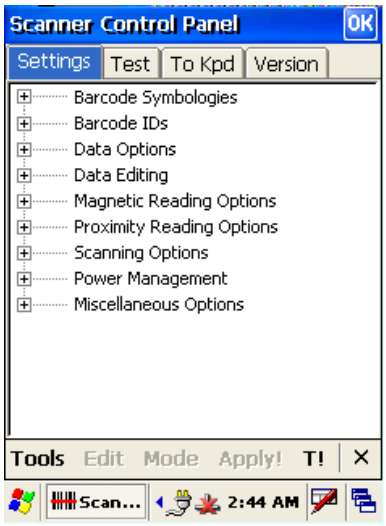


NOTE: The reading software must be enabled in order to operate the scanner.
This is achieved through a user loaded application or a preloaded utility like a scanner setting.

Testing Reader Data

The MR650 has a built-in Scanner Control Panel that can test the MR650's bar code scanner.

1. To open the Scanner Control Panel, tap → **Settings** → **Control Panel** → Double-tap **Scanner**.
2. From here users can configure bar code scanner parameters such as enabling or disabling bar code symbologies, set data transmission options, configure magnetic and proximity reading options, and set power management options.
3. To test the bar code scanner, tap the **Test** tab and slide a card through the scanner slot. The screen will display the scan results.



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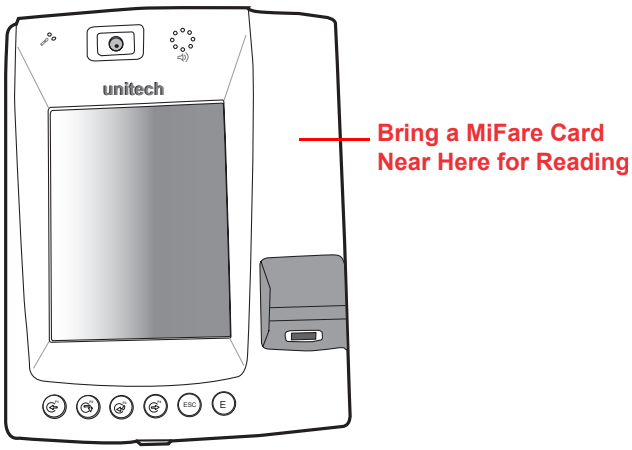
Using the MiFare Reader

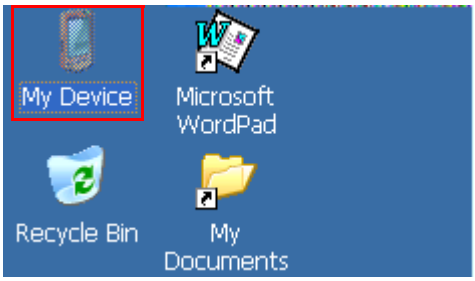
The MR650 has an optional integrated MiFare reader that verifies card readouts in just a few seconds.



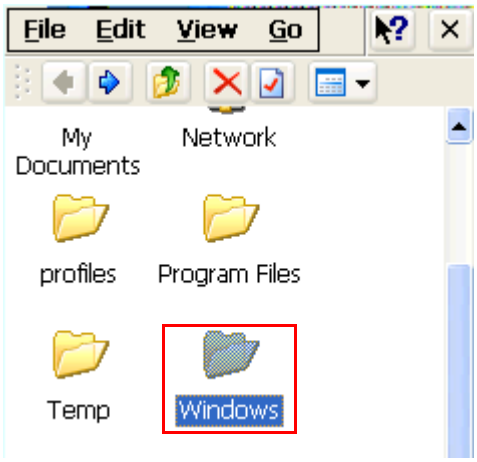
Testing the MiFare Card Verification

The MR650 has a built-in MifareDemo program that enables the user to make MiFare card verifications.

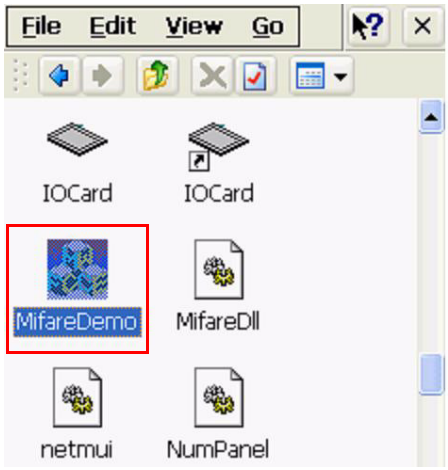
1. Double-tap the **My Device** icon on the Windows CE desktop.



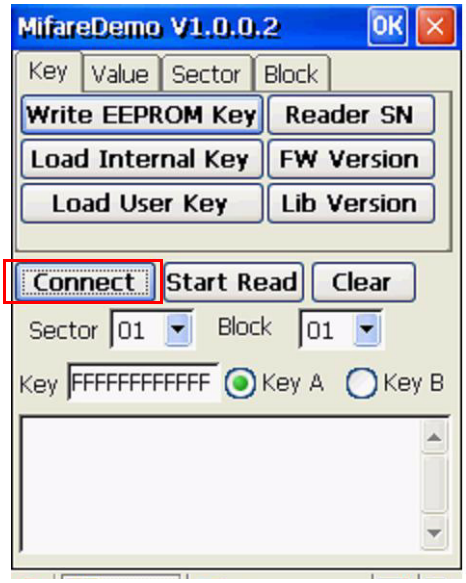
2. Double-tap the **Windows** folder.



3. Double-tap **MifareDemo** to open the program.



4. Tap **Connect** to activate the program.



5. Tap **Start Read** and bring the MiFare card close to the sensor. The code will be read and displayed on the field below.

6. Tap **Stop Read** to end the MiFare reading.

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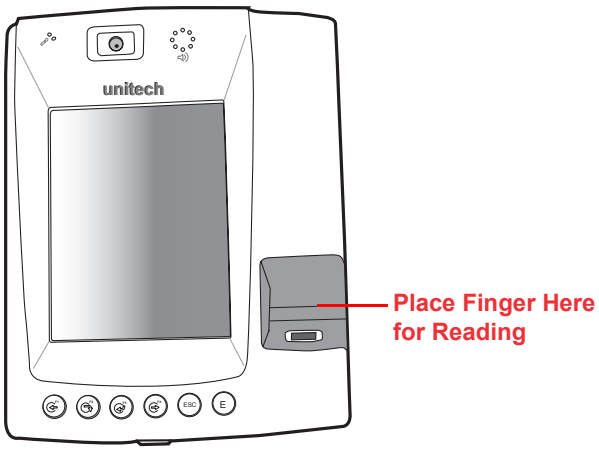
Using the Fingerprint Reader

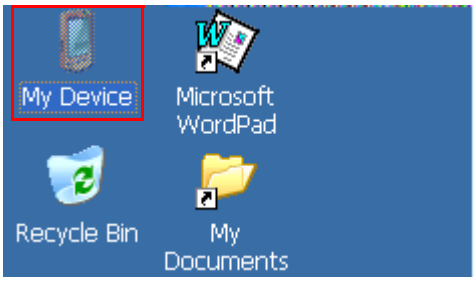
The MR650 has an optional integrated Fingerprint reader that has a verification of less than two seconds. The Fingerprint Reader is available with 4,000 fingerprint stamp templates.



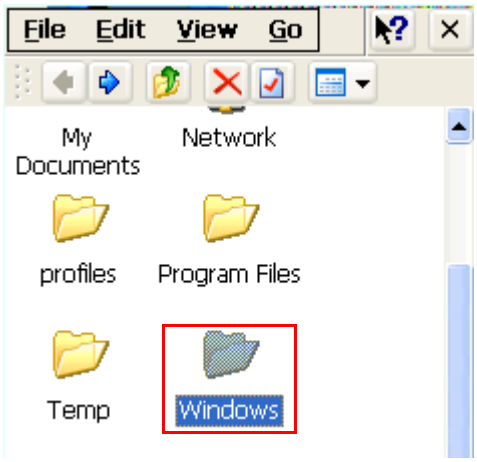
Testing the Fingerprint Verification

The MR650 has a built-in BioID Manager program that enables the user to test the fingerprint verification function. Any one of 10 fingers can scan into the MR650.

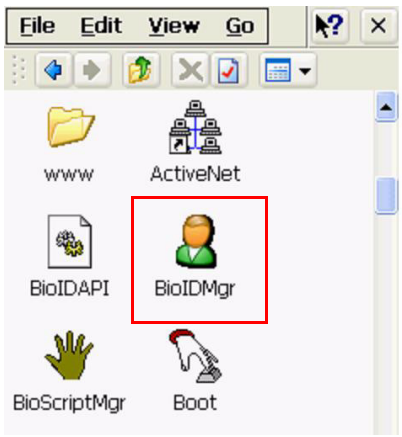
1. Double-tap the **My Device** icon on the Windows CE desktop.



2. Double-tap the **Windows** folder.



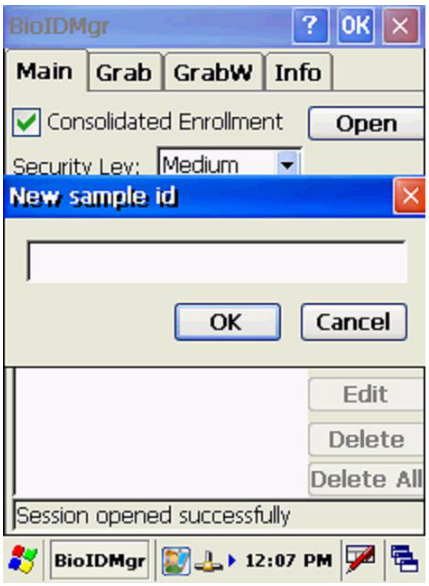
3. Double-tap **BioIDMgr** to open the program.



4. Tap **Open** to activate the BioIDMgr program.

Enrolling a Fingerprint Stamp

1. Tap **Enroll**.
2. Enter an ID number for the fingerprint and then tap **OK**.
   The following message appears: **Put finger**.
3. Place the finger on the sensor three times.
4. The ID number stores into the program record.



Verifying the Fingerprint Stamp

1. Tap **Verify**.
2. Choose the ID number from the ID list.
3. Tap **Yes**.
4. The following message appears: **Put finger**.
5. Place the finger on the sensor to verify if the fingerprint is a match.

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Using the Camera

The MR650 has a built-in 1.3 Megapixel camera, which provides the following extra functionality:

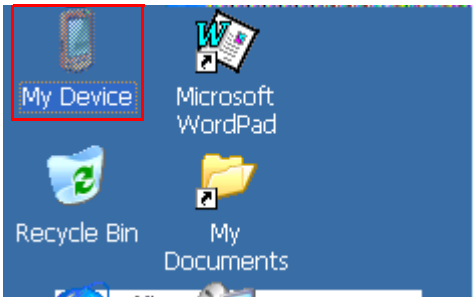
- Enables users to capture still pictures when a card is being read.
- Checks attendant time with a photo.
- Continuously records video.
- Functions as an audio/video intercom.

In addition, facial recognition is possible with third party software.

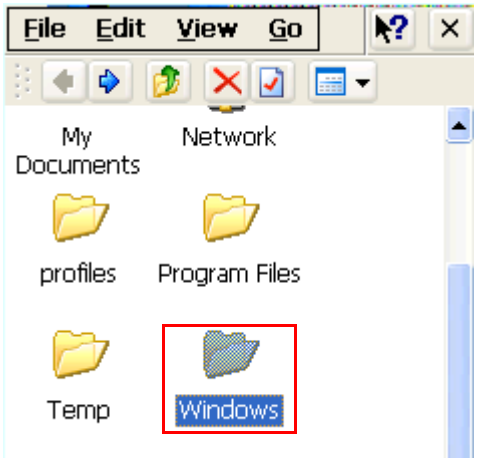
The MR650 has a demo program that enables users to capture a still picture with a card number and time stamp, when an Electro Magnetic (EM) proximity card is read.

Testing the Imager

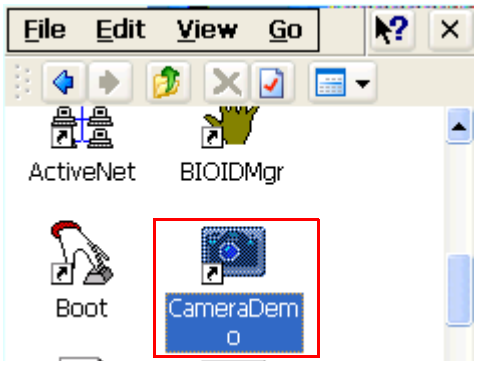
1. Double-tap the **My Device** icon on the Windows CE desktop.



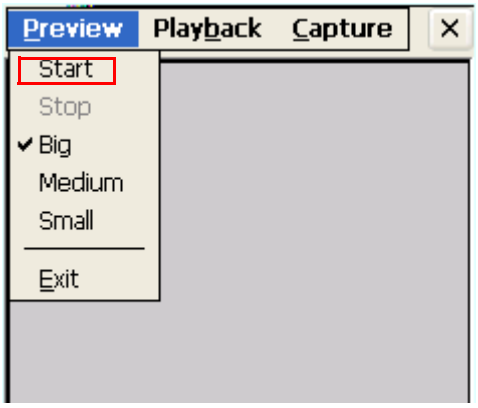
2. Double-tap the **Windows** folder.



3. Double-tap **CameraDemo** to open the program.



4. Tap **Preview** → **Start**.



A continuous image displays enabling users to capture and playback video.

Data Communication

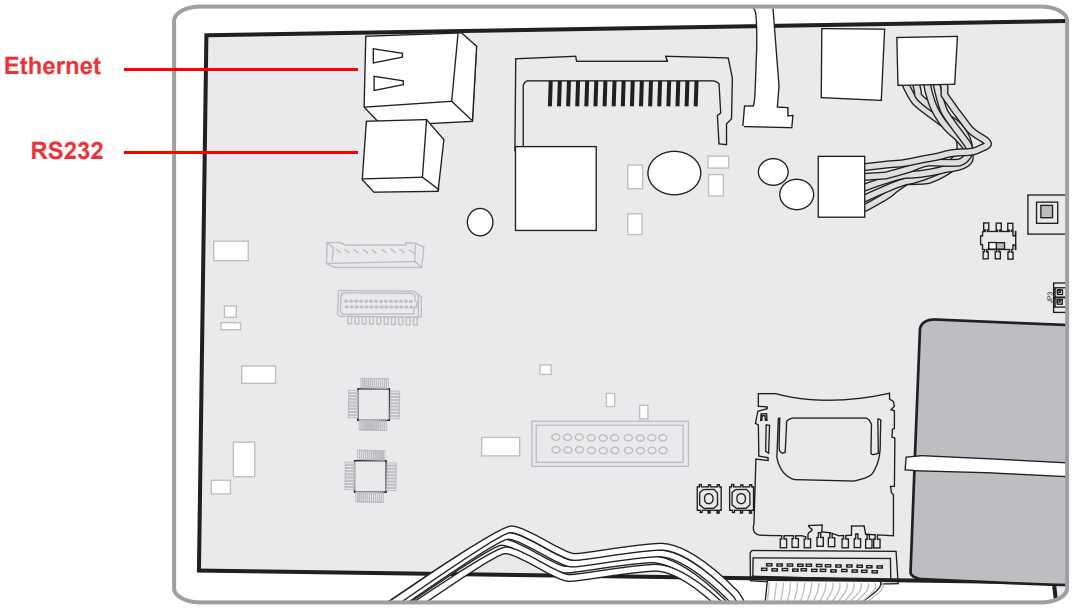
The MR650 enables users to link to a host computer via RS232, Ethernet or an Radio Frequency (RF) connection for data communication.

Establishing an MR650/PC Connection

Use the following connection methods to link an MR650 with a personal computer:

Serial Cable

1. Plug the MR650's RS232 communication cable into the PC's 9-pin COM port.
2. Insert the other end of the cable into the MR650's RS232 interface port.



Ethernet Cable

1. Plug an Ethernet cable into the PC's RJ45 Ethernet port.
2. Insert the other end of the cable into the MR650's Ethernet Port.

NOTE: In order for the optional Power-over-Ethernet (POE) module to support power over the RJ45 Ethernet cable, the client side must have a POE hub.

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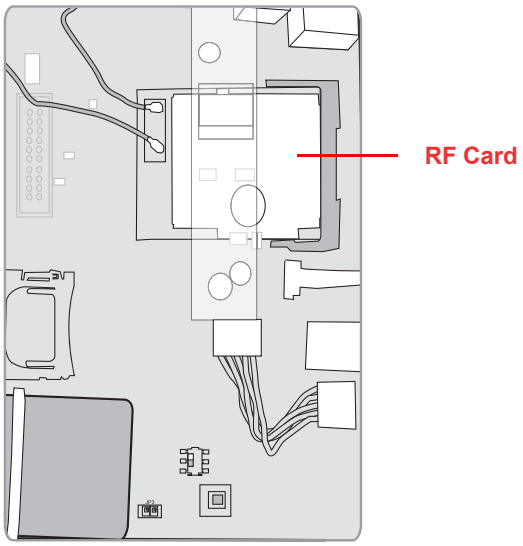
Wireless Communication

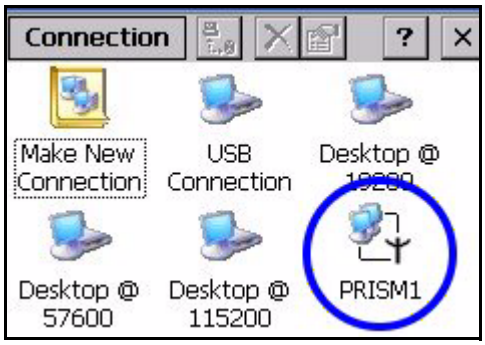
The MR650 supports an optional CF card for 802.11b/g wireless communication. To install the RF card, remove the backplate and insert the RF card into the slot.



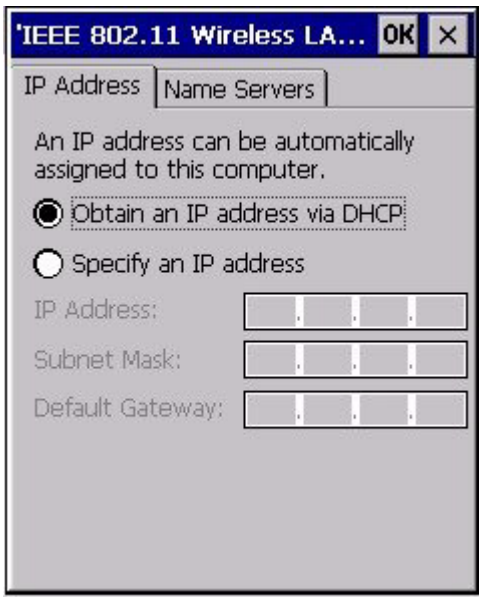
RF Communication

Users can operate the MR650 to link to the internet with Windows CE support of the Transmission Control Protocol / Internet Protocol (TCP/IP).

1. Tap → **Settings** → **Network and Dial-Up Connections**.



2. Double-tap **PRISM1** to set up the IP to connect to the Internet.



NOTE: Contact a system administrator for the IP settings for this dialog window.

Using Microsoft ActiveSync

Users can synchronize and transfer information between a desktop computer and the MR650 through Microsoft ActiveSync.

Additional Microsoft ActiveSync Capabilities

- Backup and restore MR650 data.
- Copy (rather than synchronize) files between the MR650 and a desktop computer.
- Control the synchronization occurrence by selecting a synchronization mode. For example, synchronize continuously while connecting to a desktop computer or only when a synchronization command is selected.
- Select which information types are synchronized and control how much data is synchronized. For example, synchronize past appointments during the last six weeks.

Microsoft ActiveSync Requirements

To synchronize, Mircosoft ActiveSync version 4.2 or higher must be installed on both the desktop computer and the MR650 terminal. The MR650 terminal ships with Microsoft ActiveSync already installed. Download and install the most current version of ActiveSync from **www.microsoft.com**.

Installing Microsoft ActiveSync

Microsoft ActiveSync must be installed on the computer in order to exchange information between the computer and the MR650. Microsoft ActiveSync is already installed on the MR650.

NOTE: If a previous version of Microsoft ActiveSync is installed on the computer, uninstall it first, before installing the latest version of Microsoft ActiveSync. The MR650 TASHI Terminal requires ActiveSync version 4.2 or higher.

Following these steps to install Microsoft ActiveSync on a computer:

1. Close any open programs, including those that run during startup, and disable any antivirus software.
2. Download the ActiveSync software from the Microsoft ActiveSync Download page at: **http://www.microsoft.com/downloads/details.aspx?FamilyID=7269173a-28bf-4cac-a682-58d3233efb4c&DisplayLang=en**
3. Browse to the location of the downloaded file, and double-click it. The installation wizard begins.
4. Follow the onscreen instructions to install Microsoft ActiveSync.

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Connecting the MR650 to a Computer

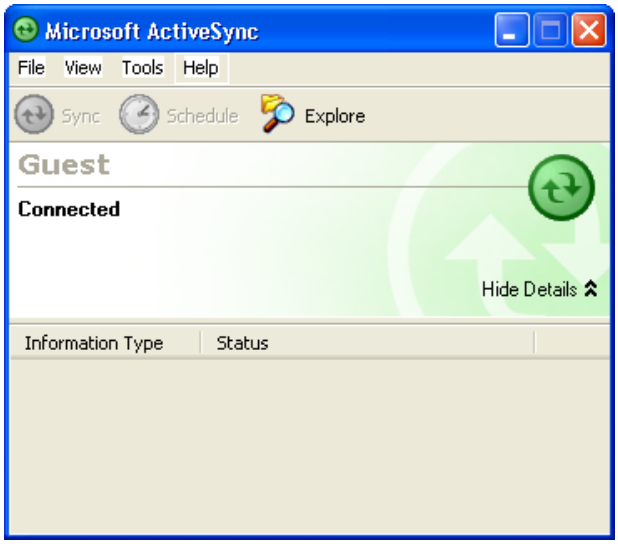
1. After Microsoft ActiveSync is installed, connect the MR650 to a PC.
2. Start the MR650.
3. Microsoft ActiveSync starts automatically and configures the communication port to work with the MR650. The New Partnership setup wizard automatically starts.

New Partnership
Set Up a Partnership
Before you can synchronize information between your mobile device and this computer, you must set up a partnership between them.
Would you like to set up a partnership?
Yes
Set up a partnership so that I can synchronize information between my device and this computer.
No
I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.
< Back
Next >
Cancel
Help

NOTE: If Mircosoft ActiveSync does not start automatically, click → **Programs** → **Microsoft ActiveSync**.

If a message appears indicating that it is unable to detect a connection, click **Cancel** and manually configure the communication settings. Manually configure the communications settings on the PC by clicking **MAS** → **File** → **Connection Setting** → **Connect Device**.

4. Follow the onscreen instructions.
5. When the configuration process is complete, the Microsoft ActiveSync window appears.

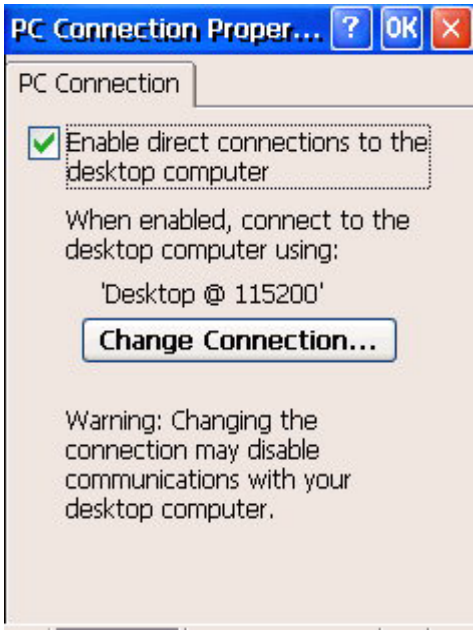


6. Synchronization will initiate, and it will synchronize periodically or upon connection.

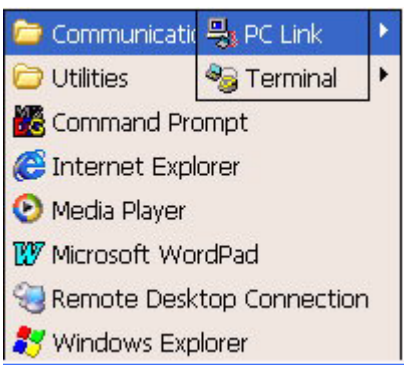
NOTE: A PC can partner with multiple MR650's. But, an MR650 can only partner with up to two computers.

7. On the MR650, tap → **Settings** → **Control Panel** → double-tap **PC Connection**.

8. Check **Enable direct connections to the desktop computer**.
9. Tap **Change Connection**.


PC Connection Proper...
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
'Desktop @ 115200'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.

10. Select the preferred connection from the drop down menu. The higher connection number equates to a faster connection speed.
11. Tap → **Programs** → **Communication** → double-tap **PC Link.**



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Setting up the Wireless Local Area Network Card

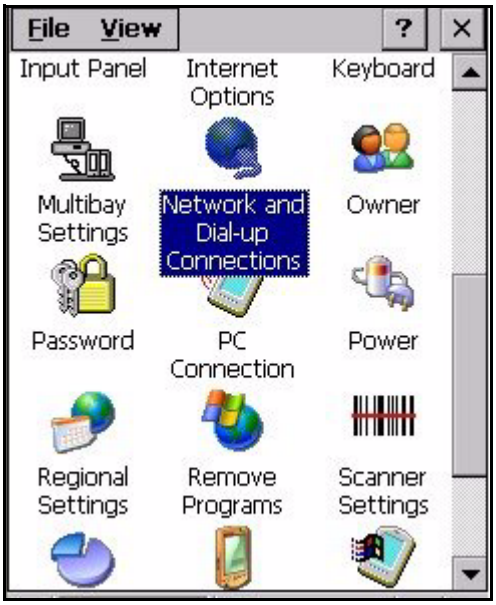
The MR650 automatically detects RF cards during initial installation. One of the following two options sets up the IP address:

- Obtaining an IP Address via Dynamic Host Configuration Protocol (DHCP) Server.
- Specifying an IP Address.

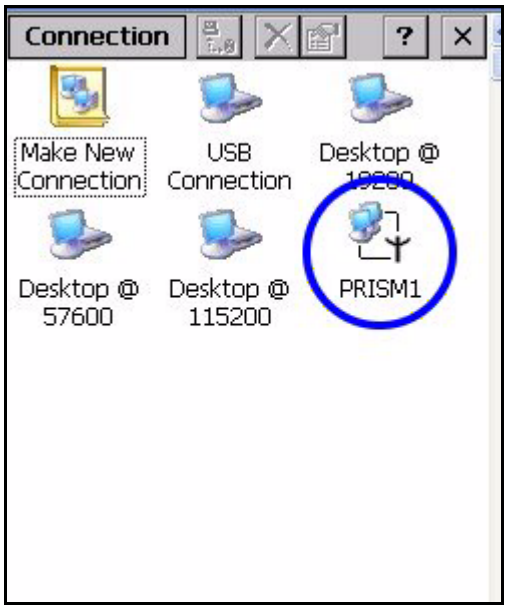
Obtaining an IP Address via DHCP Server

To obtain an IP address via DHCP server, make sure a DHCP server is available in the LAN environment.

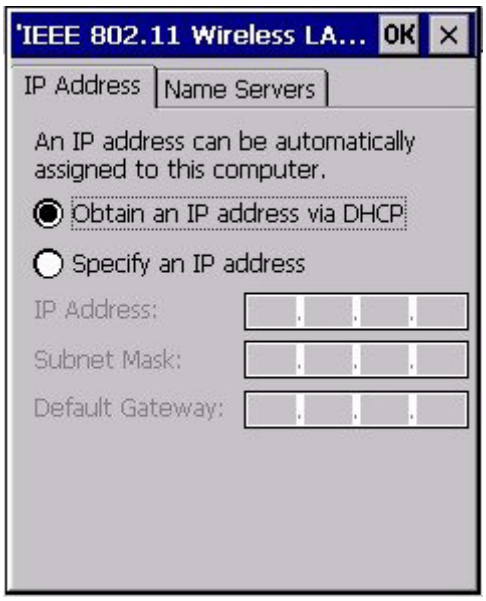
1. Tap → **Settings** → **Control Panel** double-tap **Network and Dial-up Connections**.



2. Tap **PRISM1**.
3. Tap the **IP Address** tab.



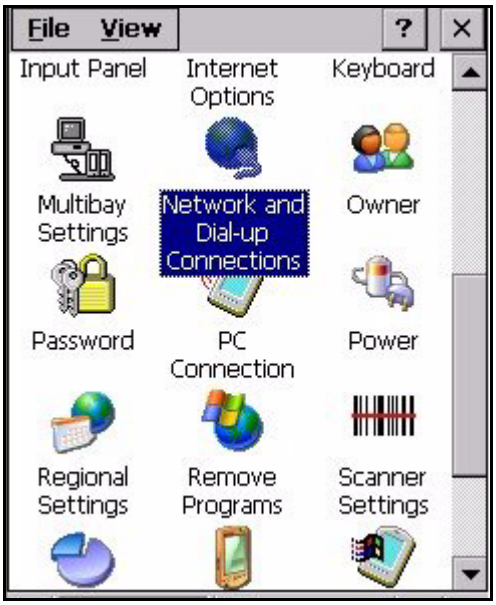
4. Select **Obtain an IP address via DHCP**. Tap **OK**.



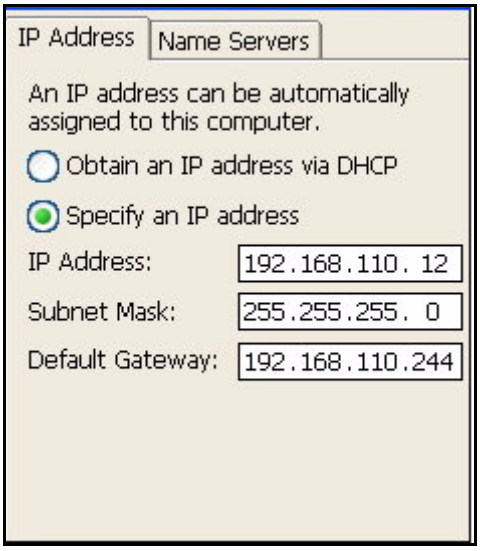
Specifying an IP Address

To specify an IP address when no DCHP server is available, assign an IP address to the MR650 as follows:

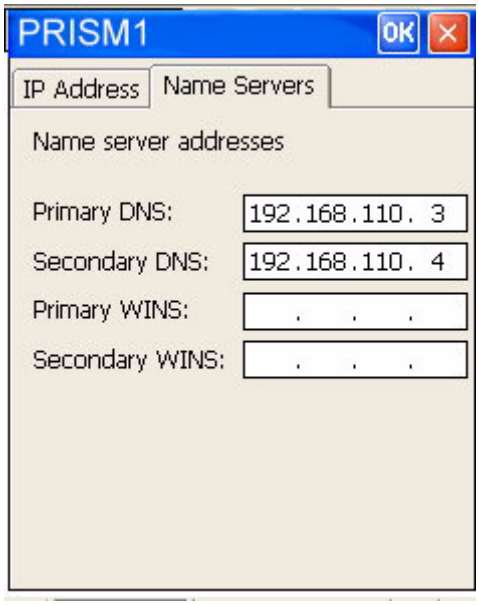
1. Tap → **Settings** → **Control Panel** double-tap **Network and Dial-up Connections**.
2. Tap **PRISM1**.
3. Tap **Specify an IP Address**.



4. Input the proper IP address, Subnet Mask and Default Gateway.


IP Address
Name Servers
An IP address can be automatically assigned to this computer.
Obtain an IP address via DHCP
Specify an IP address
IP Address: 192.168.110. 12
Subnet Mask: 255.255.255. 0
Default Gateway: 192.168.110.244

5. Tap the **Name Servers** tab, and then input the proper Primary DNS, Secondary DNS, Primary WINS and Secondary WINS.



Consulting the MIS department is recommended for avoiding any conflict with the LAN network.

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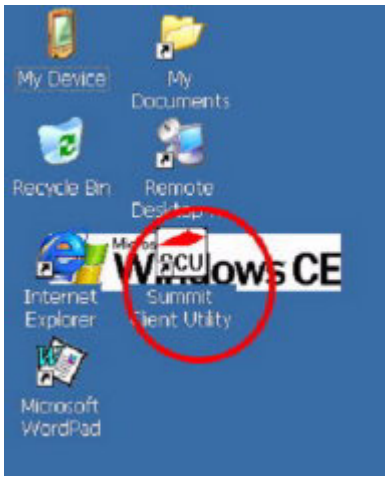
Wi-Fi Connection

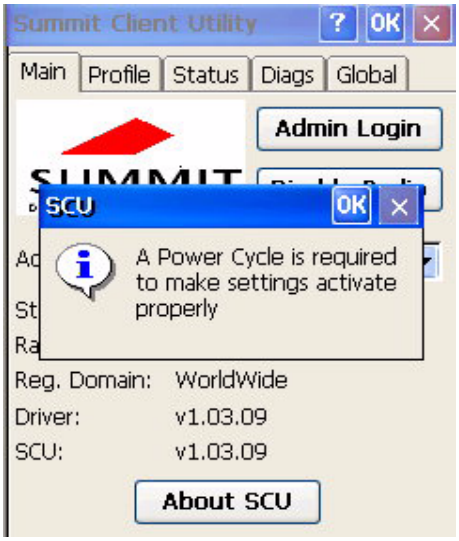
The MR650 comes with a built-in RF facility. This chapter explains how to setup the RF setting. After installing the Wi-Fi card, reboot the MR650 and the **Summit Client Utility** icon appears on the Windows CE desktop.

1. Double-tap the **Summit Client Utility**.



2. Select the **Main** tab in the Active profile drop down menu, select **ThirdPartyConfig**.

3. A Power Cycle is required to make settings active. Tap **OK** in the SCU box.



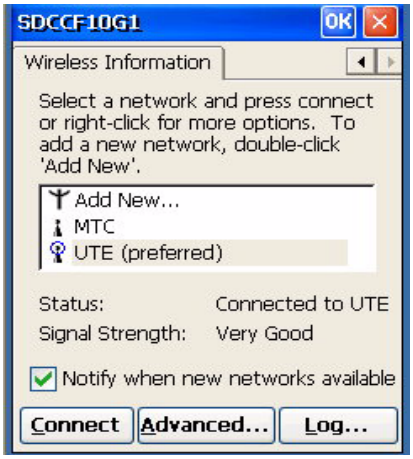
4. Tap **OK** on the Summit Client Utility tab.

5. Select **Warm Boot** in the BootMode Menu.

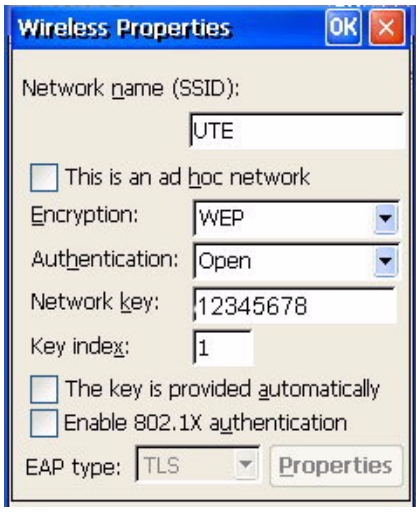
6. The RF setting Window appears once the RF card is deteced.

7. Select **Add New** (Or double-tap a preferred network) to add a new Service Set Identifier (SSID).

8. Enter the SSID. Uncheck **The key is provided automatically**. Enter the network key.



9. Tap **OK**. Start to search for the RF signal once it connects.



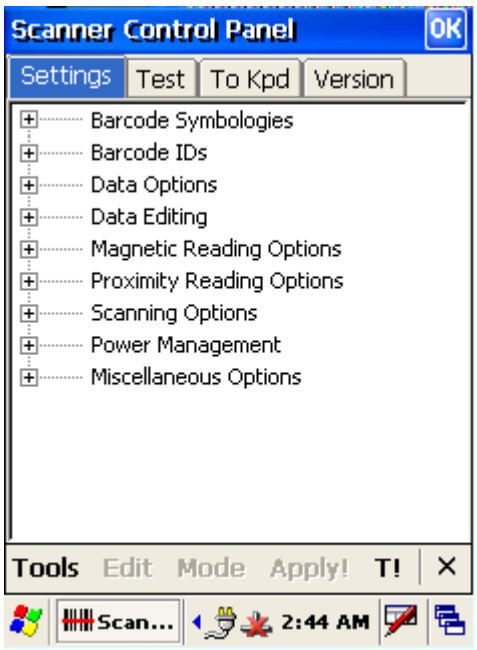
Chapter 4

Bar Code Scanner Programs

Scanner Settings

In order to change the default bar code symbology for different applications, the Scanner Control Panel allows the ability to change the default. Place the delimiter behind the scanned data and save the settings.

Tap → **Settings** → **Control Panel** → double-tap **Scanner** to display the Scanner Control Panel.

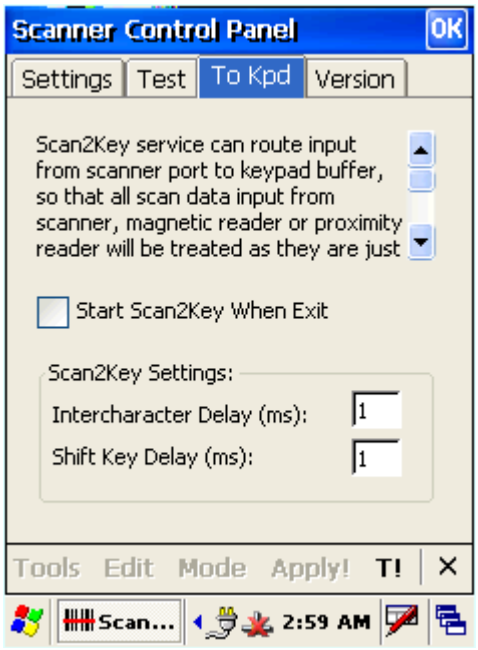


Scan2Key

The Scan2Key application routes input from a scanner port to a keypad buffer. Making all input from the scanner emulate input from the keypad. Using Scan2Key, scanned data can be directly input into a scanner port aware application such as MS Pocket Word.

Tap → **Settings** → **Control Panel** → **Scanner** → **To Kpd** to access Scan2Key settings.

NOTE: Please refer to the Scan2Key Utility Manual to refer to the Scan2key Utility Manual.

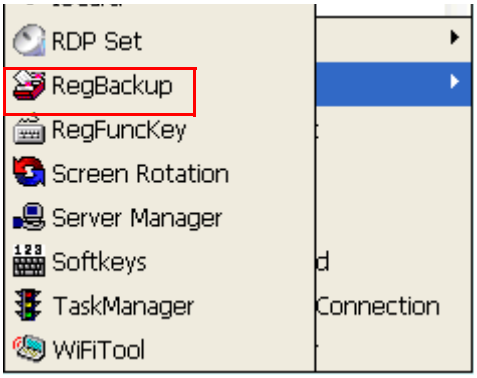


Registry Backup/Restore

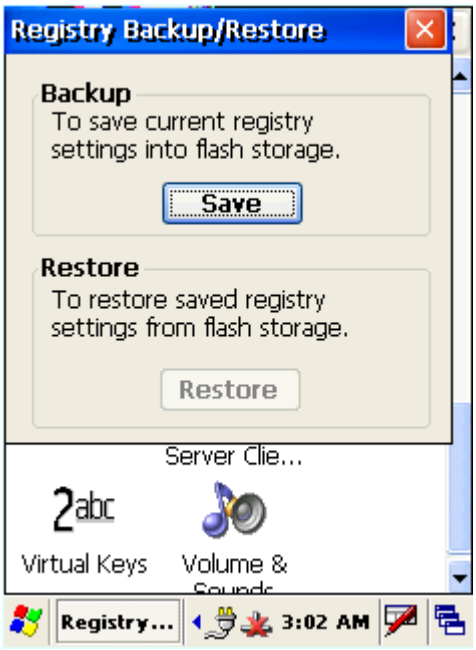
Registry Backup enables users to save current registry settings. If the system malfunctions or settings are lost, the user can go to Registry Restore to retrieve settings.

To use Registry Backup:

1. Tap → **Programs** → **Utilities** → **RegBackup**.
2. Tap **Save** to save the current registry settings.



3. Tap **Restore** to restore saved settings.
   Perform a Warm Start.
4. Tap **Yes** to perform the warm boot, or tap **No** to cancel.



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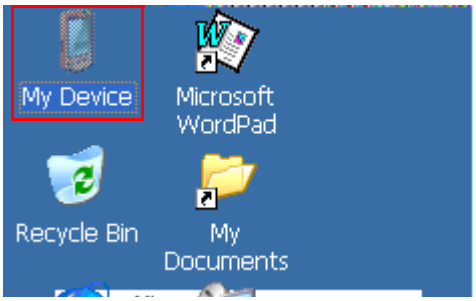
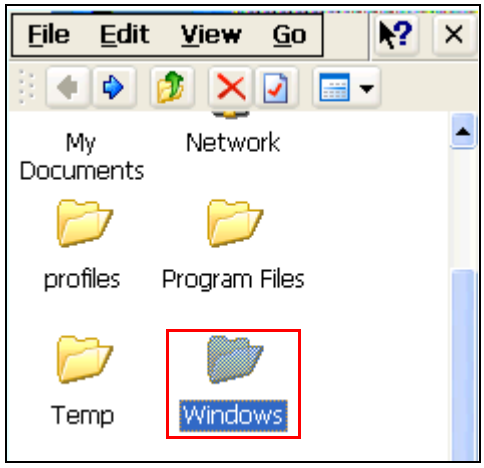
Audio Demo Program

The audio demo program enables users to test the audio input (recording) and the audio output (playback).

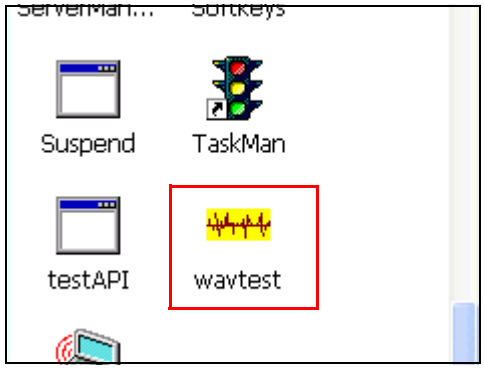
1. Double-tap the **My Device** icon on the Windows CE desktop.



2. Double-tap the **Windows** folder.

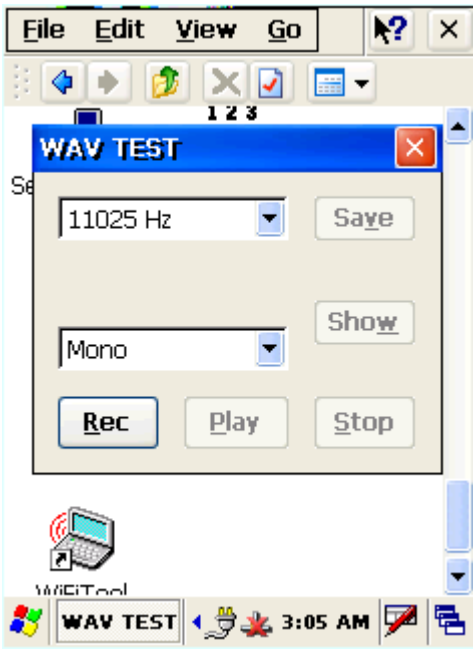


3. Double-tap **wavtest** to open the WAV TEST menu.



4. To record sound on the MR650 perform the following:

- Tap **Rec** to record the voice
- Tap **Stop** to finish recording
- Tap **Play** to listen to the recording



Power System

Charging the Backup Battery for the First Time

The MR650 is equipped with a Lithium-Ion battery. After long storage periods, the MR650 may not start without an external power source due to battery discharge. In this case, connect the MR650 to the AC Adapter and recharge the MR650 for about 22 hours to fully charge the battery.

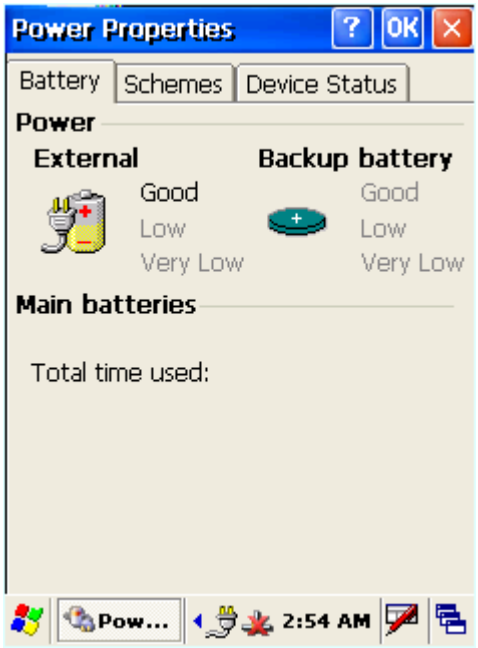
NOTE: The MR650 can operate for approximately two hours (depending on the hardware configuration and backlight usage) or can store data for three days when there is no external power. Operating with the backlight at 100 percent brightness and using the fingerprint utility consumes more power. Therefore, when the MR650 disconnects from an external power, the unit will enter sleep mode and the backlight turns off. The backlight is set to minimum brightness for conserving battery power.

Checking the Battery Status

If the main battery level becomes low in the course of normal use, a status icon appears on the device taskbar indicating low or very low battery status. If the battery level reaches low status, the device will enter suspend mode; if the battery level reaches very low status, the device will enter deep sleep mode. In this case, recharge the MR650 within 72 hours or risk losing all data on the MR650's internal memory.

When the backup battery is low, an icon appears in the Taskbar indicating that the backup battery should be recharged as soon as possible.

Check the Power Properties by tapping → **Settings** → **Control Panel** → **Power**.



CAUTION! Immediately backup data from the MR650 when there is no external power source and the backup battery icon appears in the system tray.

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Extending Battery Life

Extend the MR650's battery life by doing either of the following:

- Changing the automatic power settings.
- Reducing CPU speed.
- Minimizing backlight brightness.

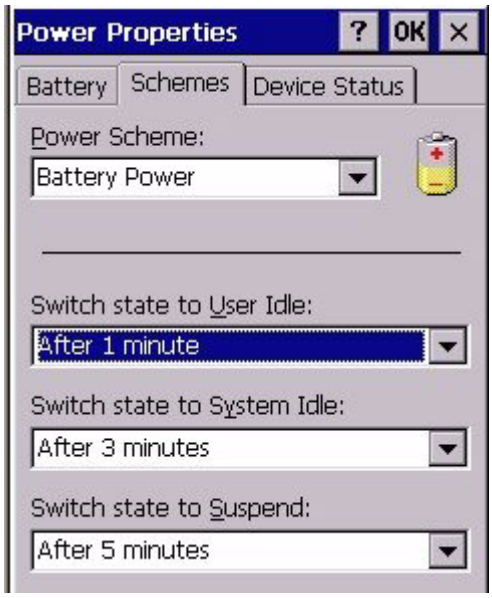
Changing the Automatic Power Settings

The MR650 enters idle mode when there is no task, or all tasks are waiting for input. In the default setting, the MR650 enters User Idle mode when there is no user input after one minute. And the MR650 remains idle for three minutes when there is no external power source. Pressing the power button returns the MR650 to the previous screen at the time of the automatic shutdown.

To change the automatic power settings:

1. Tap → **Settings** → **Control Panel** → double-tap **Power** to open the Power Properties menu.
2. Tap the **Schemes** tab.
3. Tap any arrow to select from a drop down menu of choices.
   - **Switch State to User Idle:** the MR650 switches to User Idle mode when there is no user input after the selected time.
   - **Switch State to System Idle:** the MR650 switches from User Idle mode to System Idle mode when the system is inactive after the selected time.
   - **Switch State to Suspend:** the MR650 switches from System Idle mode to Suspend mode when the system is inactive after the selected time.

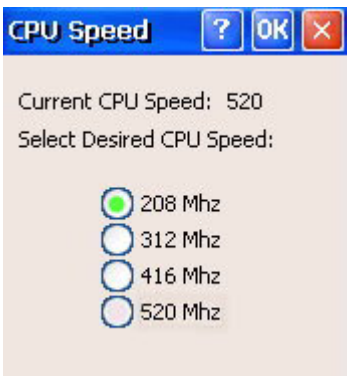
   The available time periods are 1, 2, 3, 4, 5, 10, 30 minutes and never.



Reducing CPU Speed

Follow these instructions to reduce the CPU speed.

1. Tap → **Settings** → **Control Panel** → double-tap **CPU Speed**.
2. Select a lower CPU speed to conserve battery power.



Adjusting the Backlight

This section describes screen settings and how to conserve battery power by adjusting the backlight.

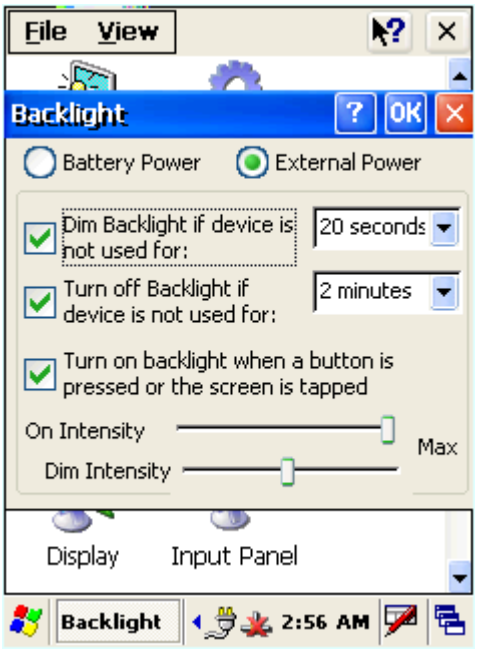
NOTE: The MR650 screen contrast has been preset by Unitech for optimum performance.

The backlight for the color display is user defined. There are two tabs – one for Battery Power and the other for External Power.

Tap → **Settings** → **Control Panel** → double-tap **Backlight** to adjust the screen brightness.

Change the backlight behavior setting and drag the **On Intensity** and **Dim Intensity** sliders to the desired levels.

Field	Description
Dim Backlight if	Select how much time elapses before the backlight dims.
Turn Off Backlight if	Select how much time elapses before the backlight automatically turns off.
Turn on Backlight	Select this option to turn on the backlight when a button is pressed or the touch-screen is tapped.



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Performing a Hardware Reset

Perform a hardware reset if the MR650 freezes (i.e., the MR650 no longer responds to the buttons on the screen).

Performing a Warm Start

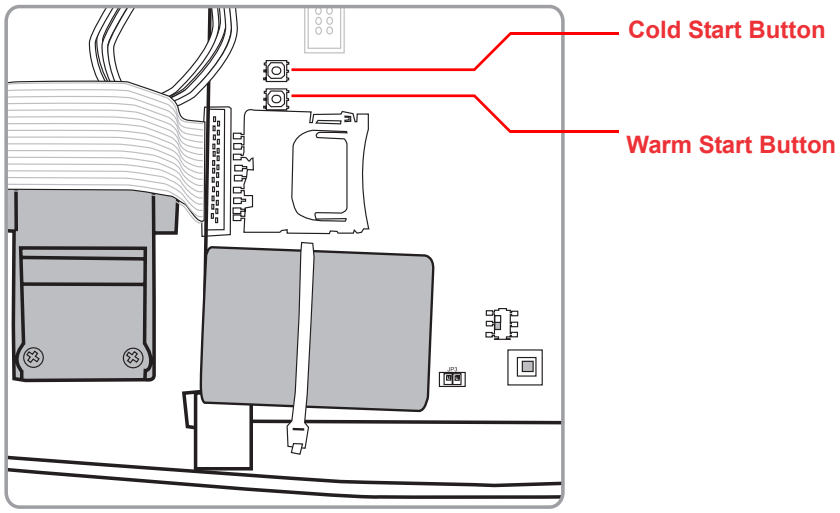
A Warm Start is used to reset or reboot the device without losing SD RAM data. Perform a Warm Start in any of the following situations:

- The MR650 fails to respond.
- After installing some software applications.
- After making changes to certain system settings, such as an SD card or CF card.

WARNING! A Warm Start will cause unsaved data to be lost.

To perform a Warm Start:

1. Remove the back-plate as described in *Open Backplate* on page 4.
2. Press the Warm Start button.



Performing a Cold Start

A Cold Start will erase all data and all program settings, and it will restore the MR650 to the default factory settings. However, data and application programs will not delete in Flash Storage.

Never perform a Cold Start unless a Warm Start does not correct the problem. During the next Microsoft ActiveSync operation, it is possible to restore data that was synchronized to the computer, or data that was backed up on a storage card. Perform a Cold Start by using the BootMode utility in the operating system, or by pressing the Cold Start hardware reset button.

Perform a Cold Start in any of the following situations:

- Reset the operating system.
- Restore the terminal back to factory defaults.
- Reset the terminal after a boot loader, keyboard and kernel upgrade.

WARNING! A Cold Start erases all data and installed applications in RAM.

To perform a Cold Start:

1. Remove the backplate as described in *Open Backplate* on page 4.
2. Press the Cold Start button.

Appendix A

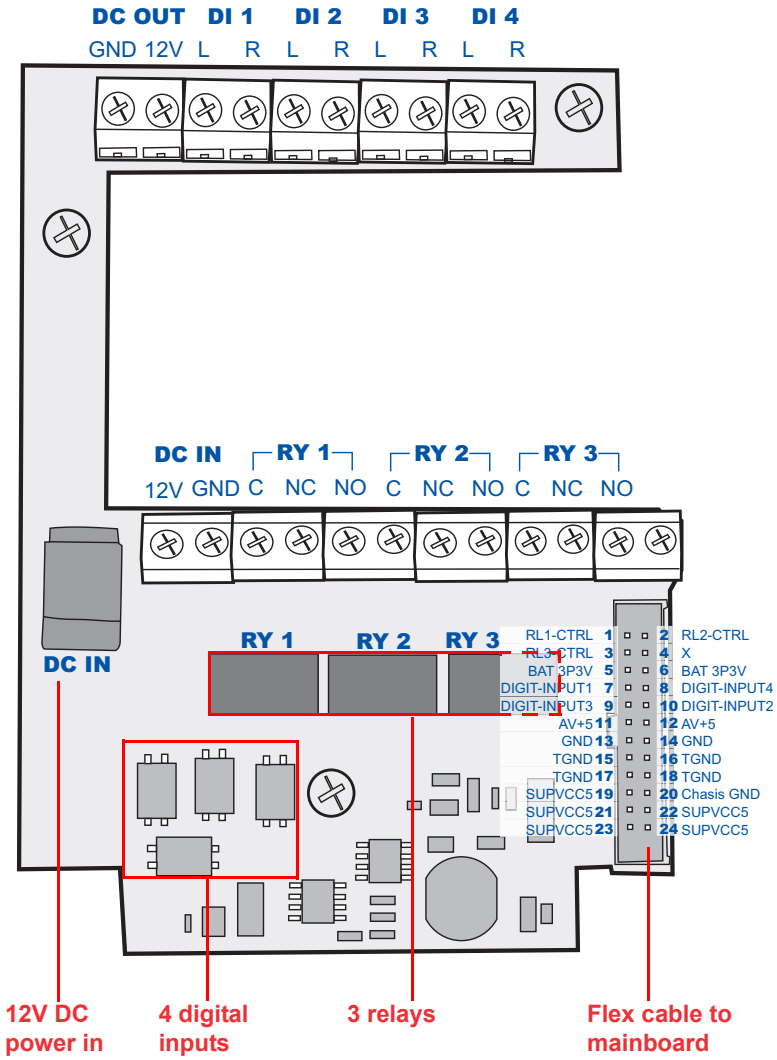
System Specification

Processing/Memory	CPU	520Mhz Intel PXA270 Processor
	Memory	SDRAM: 128 MB Flash ROM: 64 MB
OS	Microsoft Windows CE 5.0 Professional Plus	
Keypad	6-key [Clock In (F1) Clock Out (F2) Break In (F3) Break Out (F4) Enter (Yes) Escape (No)]	
Display	5.6” (240x320) QVGA, Transflective TFT with Color Touch-screen & backlight	
Communication and I/O	RS232 USB Host 802.11b/g (optional) TTL Digital Inputs (4)	Output relays (3) Ethernet Connection Power-over-Ethernet
Multimedia	Camera: 1.3 Megapixel Color CMOS Camera Audio Output: 0.8 Watt Speaker Microphone Input	
Expansion Slot	CF Type II Card Slot for Wireless 802.11 b/g SD Slot for Memory Expansion	
Power Source	Main Battery	3.8V 4000mAh Lithium-Ion
	Backup Battery	One Rechargeable Li-ion Backup Battery
Enclosure	Weight	1.5 lbs.
	Dimension	Approximately 8.7”L X 6.9”H X 3.9”W
Environmental	Operating Temperature	-32ºF - 122ºF (-0ºC - 50ºC)
	Storage Temperature	-4ºF - 158ºF (-20ºC - 70ºC)
	Relative Humidity	5% - 95% RH (non-condensing)
Certification	CE, FCC, BSMI, VCCI, RoHS compliant	
Barcode Input	**Symbologies Supported**	
	China Postal Code Codabar Code 11 Code 32 Code 39 Code 93 Code 128 Delta Code	Interleaved 2 of 5 ISBT 128 Label Code IV Label Code V MSI Standard 2 of 5 Toshiba Code UPC/EAN
Software	Embedded Visual Basic terminal program for T&A Embedded Visual C++ terminal program for T&A	
Magnetic Stripe Reader	3-track MSR reader	
Proximity Reader	EM, 125 kHz HID, 125 kHz MiFare, 13.56MHz	

Appendix B

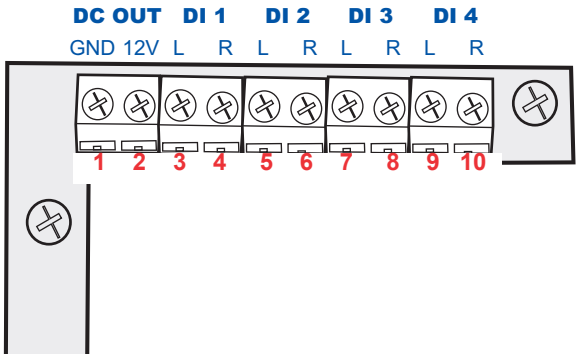
Terminal Block

Overview of the MR650 Terminal Block

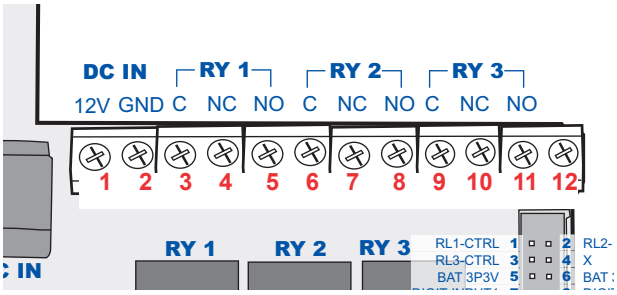

DC OUT DI 1 DI 2 DI 3 DI 4
GND 12V L R L R L R L R
DC IN RY 1 RY 2 RY 3
12V GND C NC NO C NC NO C NC NO
DC IN
RY 1 RY 2 RY 3
RL1-CTRL 1 2 RL2-CTRL
RL3-CTRL 3 4 X
BAT 3P3V 5 6 BAT 3P3V
DIGIT-INPUT1 7 8 DIGIT-INPUT4
DIGIT-INPUT3 9 10 DIGIT-INPUT2
AV+5 11 12 AV+5
GND 13 14 GND
TGND 15 16 TGND
TGND 17 18 TGND
SUPVCC5 19 20 Chasis GND
SUPVCC5 21 22 SUPVCC5
SUPVCC5 23 24 SUPVCC5
12V DC power in
4 digital inputs
3 relays
Flex cable to mainboard

MR650 Terminal Block Pin Assignment

Pin	Name	Description
1	GND	GND
2	DC Out	Support +12V, 0.5A
3	DI1-L	Photo-In Anode(-)
4	DI1-H	Photo-In Cathode(+)
5	DI2-L	Photo- In Anode(-)
6	DI2-H	Photo-In Cathode(+)
7	DI3-L	Photo- In Anode(-)
8	DI3-H	Photo-In Cathode(+)
9	DI4-L	Photo- In Anode(-)
10	DI4-H	Photo-In Cathode(+)



Pin	Name	Description
1	DC In	+12V, 2A
2	GND	GND
3	RY1-C	Common
4	RY1-NC	Normal Close
5	RY1-NO	Normal Open
6	RY2-C	Common
7	RY2-NC	Normal Close
8	RY2-NO	Normal Open
9	RY3-C	Common
10	RY3-NC	Normal Close
11	RY3-NO	Normal Open
12	No Use	No Use



Relay

RL1 –CTRL → High	RY1(C & NC Linked)
RL1 – CTRL → Low	RY1(C & NO Linked)
RL2 –CTRL → High	RY2(C & NC Linked)
RL2 – CTRL → Low	RY2(C & NO Linked)
RL3 –CTRL → High	RY3(C & NC Linked)
RL3 – CTRL → Low	RY3(C & NO Linked)

Digit Input

DI1-H and DI1-L are the positive and negative nodes of the external power input.

DI1 = High	Digit-Input1=High
DI1 = Low	Digit-Input1= Low

DI2-H and DI2-L are the positive and negative nodes of the external power input.

DI2 = High	Digit-Input2=High
DI2 = Low	Digit-Input2= Low

DI3-H and DI3-L are the positive and negative nodes of the external power input.

DI3 = High	Digit-Input3=High
DI3 = Low	Digit-Input3= Low

DI4-H and DI4-L are the positive and negative nodes of the external power input.

DI4 = High	Digit-Input4=High
DI4 = Low	Digit-Input4= Low

Appendix C

Worldwide Support

Region	Web site
Global Operation Center	www.unitech-adc.com
Unitech Taiwan	adc-utt.unitech.com.tw
Unitech Asia Pacific & Middle	www.unitech-utp.com.tw
Unitech China	www.ute.com.cn
Unitech Japan	www.unitech-japan.co.jp
Unitech America	www.ute.com
Unitech Latin America	latin.ute.com
Unitech Europe	www.unitech-europe.nl

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